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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/057,466	01/22/2002	Antoine J. Roupheel	2001P15530US	9756

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Siemens Corporation
Attn: Elsa Keller, Legal Administrator
Intellectual Property Department
186 Wood Avenue South
Iselin, NJ 08830

EXAMINER

LU, JIA

ART UNIT	PAPER NUMBER
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2634

DATE MAILED: 08/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/057,466

Applicant(s)

ROUPHAEL ET AL.

Examiner

Jia W. Lu

Art Unit

2634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 July 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-42 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-42 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 June 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. *Applicant's amendments with respect to independent claims 1 and 12 have been considered but are moot in view of the new ground(s) of rejection.*

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2. Claims 1-22 are rejected under 35 U.S.C. 101 because the disclosed invention is inoperative and therefore lacks utility.
 - a. Regarding independent claims 1 and 12, applicant amends "at least a second feedback equalizer, which can be activated by the first feedback equalizer depending on said first error signal", meaning that the first feedback equalizer activates the second feedback equalizer. The sole function of a feedback equalizer is to equalize an input signal; it is incapable of controlling another device, such as activating a second equalizer.
 - b. Claims 2-11 and 13-22 are rejected based on rejected base claims.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

Art Unit: 2634

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1-22 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.
 - a. Regarding independent claims 1 and 12, amended claims state that the first feedback equalizer activates the second feedback equalizer. According to the specification, the second feedback equalizer is activated by means of a "split decision" (paragraph 0023) based on a mean squared error. However, the first equalizer does not receive this value. Instead, a decision device receives this value (figure 2, element 170).
 - b. Claims 2-11 and 13-22 are rejected based on rejected base claims.

Claim Rejections - 35 USC § 102

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Applicant's arguments regarding claims 23, 32 and 33 have been fully considered but they are not persuasive. The Examiner has thoroughly reviewed Applicants'

arguments but firmly believes that the cited reference (US 6,307,884, hereafter '884) to reasonably and properly meet the claimed limitations.

5. Claims 23-42 are rejected under 35 U.S.C. 102(e) as being anticipated by Ke Du in US patent 6,307,884 (hereafter '884).

a. Regarding claims 23 and 33, '884 shows a method of processing digital symbols comprising the steps of: processing the sequence of digital symbols (figure 7, "ak1" and "ak2"), determining an uncertainty in the processing (figure 7, "ek1" and "ek2"), and if the uncertainty exceeds a predetermined threshold (column 6, lines 32-48), processing at least two sequences of digital symbols (figure 7, "ak1" and "ak2") where at least one parameter is set differently in each sequence (column 6, lines 37-39), and deciding upon a calculated error for each sequence (figure 7, elements 168 and 170) which sequence is used to generate an output signal (figure 7, elements 174 and 176). *In response to applicant's argument that "the processing implies that only a single sequence is processed as otherwise it would not make any sense to process two sequences upon occurrence of a specific event", this implication cannot be made based on the claim language, which gives no alternative processing step for when uncertainty fails to meet the conditional statement. As an example, the alternative could just as likely be "processing at least two output sequence of digital symbols each having at least two parameters from the other".*

- b. Regarding claims 24, 25, 34 and 35, patent '884 further shows a forward filter (figure 2, element 136), an adder (figure 7, element 160), a slicer (figure 7, element 152), and a feedback filter (figure 7, element 156).
- c. Regarding claims 28 and 38, patent '884 further shows a buffer memory for storing the slicer output (figure 7, elements 164 and 166).
- d. Regarding claims 26 and 36, patent '884 describes the use of a Viterbi detector in its equalizer (column 2, lines 10-14).
- e. Regarding claims 27 and 37, patent '884 describes the step of deciding which processing path is selected to be activated by an error threshold (column 6, lines 32-48).
- f. Regarding claims 29 and 39, patent '884 describes the number of buffered output signals to be proportional to the time for determining the decision (column 6, lines 52-56).
- g. Regarding claim 32, patent '884 describes that at least one parameter of the processing of the selected sequence is transferred to the processing of the other sequence (column 7, lines 33-37). *In response to applicant's argument that "Du et al. does not disclose to transfer any parameter from one decision equalizer to the other", the word "parameter" can be used to describe anything that defines a system. Sited reference teaches that "some of the energy from the correct decision can be used to help the erroneous slicer make a correct decision sooner". This implies that energy can be a parameter from the selected sequence that may be used to help*

process the other sequence. Although the word "transfer" is not used in the reference, it can be implied that the energy must be transferred in some way or form into the other sequence in order for it to be of help to the second sequence in making a correct decision.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 30, 40 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over US patent 6,307,884 as applied to claims 1 and 12 above, and further in view of US patent 6,341,360.

- h. Regarding claims 30 and 40, patent '360 shows the calculation of error to be a mean squared error calculation (column 10, lines 24-26). It would have been obvious to one ordinarily skilled in the art to use a mean squared error calculation in an equalizer system described in patent '884 to calculate error in order to efficiently account for all data and power to generate the most representative error value.
- i. Claim 41 inherits the limitations of claims 1 and 12 above; however, patent '884 does not disclose the initiation of a decision process upon a predefined number of consecutive ambiguous decisions. Patent '360

shows the initiation of a decision process upon a predefined number of consecutive error decisions (abstract, lines 7-12). Because the ambiguity decision of present claim is derived from error calculations, it would have been obvious to one ordinarily skilled in the art at the time of invention to use a consecutive number of errors in a decision feedback equalizer as described in patent '884 to initiate a decision process, because this provides a measure of stability for the decision feedback equalizer under transient high noise conditions.

8. Claims 31 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over US patent 6,307,884 as applied to claims 1, 12, 23 and 33 above, and further in view of US patent 6,816,548. Patent '884 describes the use of an adaptive forward filter (column 4, line 50), however it does not describe the feedback equalizer to be adaptive. Patent '548 shows the use of both an adaptive forward and adaptive feedback filters (abstract, lines 3-5). It would have been obvious to one ordinarily skilled in the art to make the feedback filter adaptive in an equalizer in order to dynamically compensate for the effects of constant changing channel conditions and disturbances on the signal transmission channel.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

Art Unit: 2634

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jia W. Lu whose telephone number is 571-272-6042.


The examiner can normally be reached on Mon- Fri, 10:30AM-6:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on (571)272-3056. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2634

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jia Lu
Examiner



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